

Primary science investigations

rsc.li/3ilXrm2

Anti-gravity bottle



Anti-gravity bottle

We will be:

Exploring air pressure
and how this can stop
some objects from
falling.



Learning objectives

Understanding

- I understand that air particles create forces we usually don't notice.
- I understand that air is all around us and creates pressure in all directions.
- I can explain what air pressure is.
- I understand that air pressure can overcome the effects of gravity and can stop objects from falling.

Enquiry skills:

- I can make predictions, observations and comparisons.



Useful vocabulary

- **Force:** a push, pull, or push and pull that happens whenever objects (solids, liquids or gases) meet each other. A force can make an object speed up, slow down or change direction. Forces which are 'balanced' cancel each other out and there is no movement.
- **Pressure:** a measure of a force over an area. A force on a large area creates less pressure than the same force on a much smaller area.



Useful vocabulary

- **Gravity:** the force which pulls all objects downwards towards the centre of Earth.
- **Area:** the space taken up by a flat shape or an object's surface.



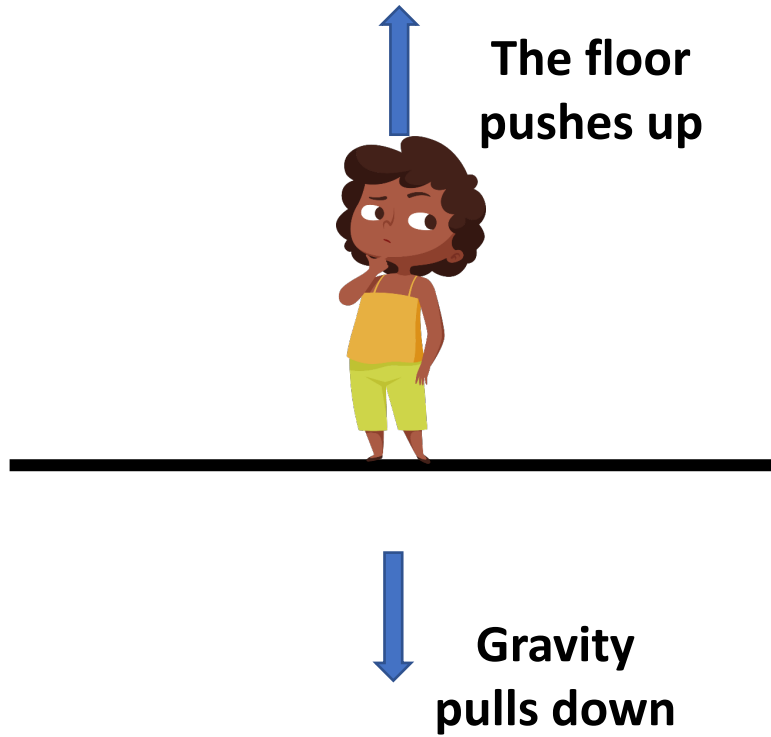
Can you explain what's going on in these pictures?



Pair and share



So, what's going on here?



The forces are **BALANCED**



Method

1. Pour water into the glass.
2. Place a piece of card over the opening of the glass.
3. Keeping the palm of one hand on the glass, turn it upside down over the tray.
4. Remove your hand.



**Can you explain what's going on?
It's pair and share time again!**



So, what links this



and this?



What can you see happening in each picture?

What differences do you see?

What forces are acting on the card?

Can you show all the places where they are acting?

Try experimenting with different quantities of water in the glass

Does it make any difference?

Can you explain your observations?

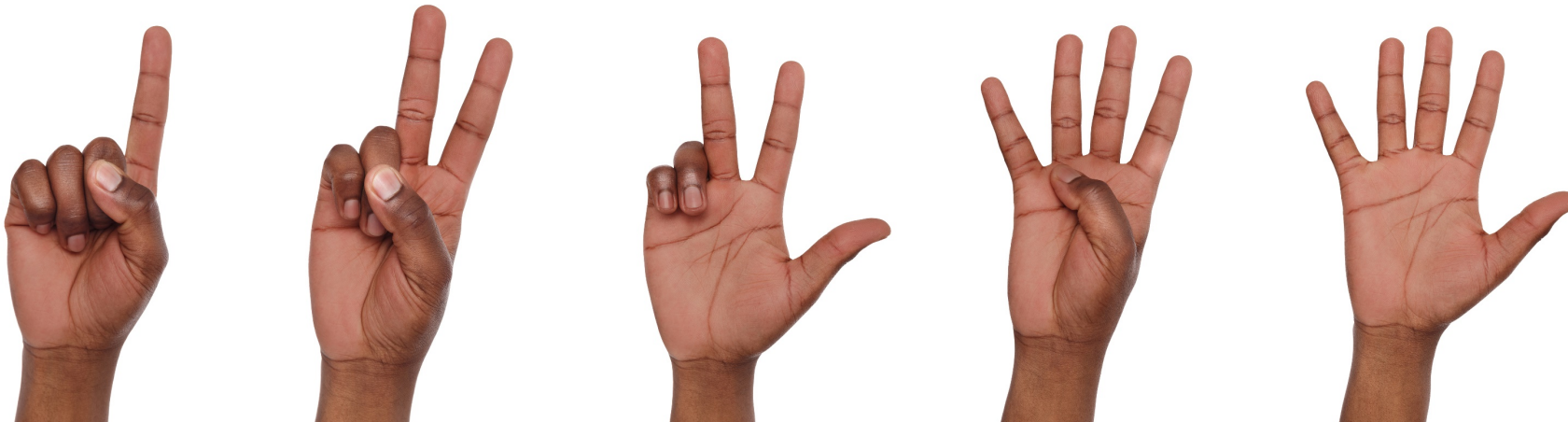


Evaluation

How do you feel about our **learning objectives** today?

- I understand air pressure and that it is all around us.
- I understand that air pressure pushing up can be greater than gravity pulling down.
- I understand that air pressure can stop objects from falling.

If you feel confident, show your teacher 5 fingers, or show 1 if you feel that you need to chat through the lesson again.





Acknowledgements

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